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ABSTRACT

Test anxiety is of particular significance in education in light of its debilitative effect on test scores and the implications and longranged effects of test results on the individual lives of the school children. This research is concerned with test anxiety of children under different test conditions. Subjects were 4th and 6th grade students who ranked math as most difficult and spelling as easiest among school subjects. They were given the Test Anxiety Scale for Children (TASC) under 3 conditions, in conjunction with the math test (difficult), with the spelling test (easy), and with no test. Administration was arranged to control for ordering effects. It was found that a significant difference between the means of the TASC under easy and difficult test conditions occurred. It was also determined that in repeated use of the TASC a significant ordering effect occurs, that is, the repeated TASC score becomes increasingly socially desirable. However, the significant difference between easy and difficult test conditions occurred in spite of this tendency. The significance of these findings indicate the possible use of the TASC to determine specific test anxiety under differing conditions. (Author)

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Anxiety Differences in Difficult and Easy Test Conditions

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Our contemporary society with its increasing complexities and competitiveness has given rise to a phenomenon generally known as anxiety. This phenonmenon has been of general interest to behavioral scientists and myriad research has flowed forth related to various aspects of this phenomenon. Unfortunately, despite the proliferation of research forthcoming regarding anxiety, it is replete with ambiguities and inconsistent findings. This state of affairs is in part due to the diversity of views held by leading anxiety researchers. The problem is not that anxiety does not have a common core definition which remains stable across studies. It is suggested that almost every one agrees that anxiety is an unpleasant feeling state which has physiological concomitants (Krause 1961). The problem enters in with the various shadings of meanings which are relative to the individual researcher's orientation (Ruebush 1963).

This problem is clearly indicated in the somewhat indiscriminate use of the term to refer to two different types of concepts of anxiety, namely 'state' anxiety which refers to the relatively permanent concept of anxiety and 'trait' anxiety, referring to the fluctuating or transitory concept of anxiety occurring under certain conditions. Empirical evidence of the different types of anxiety concepts emerged from the analytic studies of Catell and Scheier (1961). Hodges and Spielberger

(1969) recently verified this important distinction, and cleared up some previously contradictory findings regarding anxiety.

In addition to various conceptualizations anxiety has also been measured in three different ways without obtaining significant agreement between these measures, thus adding to confusion of the concept of anxiety. Phillips (1969) suggests that anxiety is manifest and therefore is measurable behaviorally, physiologically and phenomonalogically. Unfortunately, there is preponderantly low correlation among these types of measures. Each has advantages and disadvantages. It was the concern of this present study to be concerned with the most practical measure possible, other aspects being equal. In this regard, introspective scales have the advantage. As regards validity, no one of the three measures can be clearly established as more valid than the other, although it has been argued that introspective scales need to be used in conjunction with other measures for defining transitory anxiety (Krause 1961).

Anxiety is of widespread concern among laymen and behavioral researchers primarily because of its generally agreed upon debilitative effect upon performance. In light of this conceptualization, anxiety is of primary importance as it relates to school children and their school performance particularly since so much importance both present and future is placed upon school performance. The desire is to learn about school anxiety in the interest of reducing it or eliminating it so that the student is 'free' to perform maximally. Among the leaders of anxiety research with school children are Sarason, S. B., Davidson, D. S., Lighthall, F. F., Waite, R. R., and Ruebush, B. K., who in the process of research with test anxiety, developed a scale called 'Test

Anxiety Scale for Children' (TASC). A major concern of this group of researchers was the confusion regarding anxiety related to the tendency to study individuals labeled anxious with little concern regarding what they were anxious about, consequently, their emphasis toward test anxiety. This restricting to a common denominator of test anxiety speaks in the direction of the problem of 'state' and 'trait' anxiety distinction. In review of the research done by the Sarason team, it was determined that the use of test anxiety was perhaps a step in the right direction but a question arose which gave emphasis to this present research. Is not test anxiety variable for each individual, depending upon his response to the specific aspects of the test such as its content areas? That is, does not test anxiety vary across individuals in degree, depanding on the difficulty of the content areas as perceived by the various individuals?

PROCEDURES:

In the chosen school district, the S.R.A. achievement series is given annually to the 4th and 6th grade students. Permission was obtained to use the results and to organize the administration of the S.R.A. tests to fit the design of this present study.

There were 128 4th graders and 119 6th graders who were selected as subjects for this present study. Their selection from the population of 1360 students was made on the basis of their choice of math as the difficult content area and spelling as the easiest, from a list including, in addition, social studies, science, and reading. A variable sequence for the administration of the research procedures was designed in order to control for the sequential effect of readministration of a self-report scale. The sequences were designed as follows.

Each group of 4th and 6th grade subjects was divided equally and labeled 4a1 & 4a2, 4b1 & 4b2, 6a1 & 6a2, 6b1 & 6b2 purely for identification and routing purposes. The 4a and 6a groups were administered the TASC one week prior to the administration of the S.R.A. tests. Following this one week interim, groups 4a1 and 4b1, 6a1 and 6b1 were administered the math subtest followed immediately by the TASC, and the following day were administered the spelling subtest followed immediately by the TASC. The other groups, 4a2 and 4b2, 6a2 and 6b2 were administered the spelling test followed immediately by the TASC and the next day were administered the math test followed immediately by the TASC. After a one week interim following the S.R.A. test the TASC was administered to groups 4b1 and 4b2 and 6b1 and 6b2. This change in sequence was a result of an earlier finding that anxiety levels rose dramatically following the math subtest, regardless of when it occurred in the order and consequently had an elevating effect on all later subtest anxiety measures.

FINDINGS:

In consideration of the results of this present research an unexpected finding occurred in conjunction with the first hypothesis. The first hypothesis was related to the correlation of the TASC under three conditions of easy test material, difficult test material and in relation to no test material. The expected finding of a close relationship between the difficult TASC related results and the TASC results with no test relationship did not occur. Rather there was a close correlation between the difficult testing condition and the easy testing condition. See Table 1.

TABLE 1

CORRELATIONS OF THE EASY, DIFFICULT AND GENERAL TASC SCORES USING THE TOTAL TASC SCORES

	Difficult	General
Easy	.83	.68
Difficult		.72

In examination of the procedure, a possible explanation of the turn of events was that both of these scores were taken immediately following a testing condition, thus the score of each was elevated beyond that of the general anxiety score. Though this finding was not significant its discovery was encouraging as it relates to one of the major hypothesis of this research, namely, that the TASC is an introspective instrument capable of indicating anxiety experiences in specific situations. It was found that the TASC reflected a significantly higher anxiety level under difficult testing conditions than under easy testing conditions. See Table 2.

TABLE 2

ANOVA SUMMARY TABLE - TOTAL TASC

Source	Degree of Freedom	Sums of Squares	Mean Squares	F
Between Subjects	190	29803.971		
Sequence Groups	3	386.896	128.9655	0.82
Error (B)	187	29417.074	157.3106	
Within Subjects				
Situation (difficult, easy, general)	2	134.716	67.3579	4.57*
Diff-Easy	(1)	(133.836)	(133.836)	9.087*
Interaction - Sequence Groups by Situation	6	647.732	107.9554	7.33*
Linear decrease over Order	(1)	(453.658)	(453.658)	30.803*
Error (w)	374	5508.245	14.7279	
Total	572	36094.664		

p .05

Table 2 presents the analysis of variance, which indicated an F-value for the difference between the means of the general TASC (12.49), the easy TASC (11.81), and the difficult TASC (12.99), of 4.57 (df=2,374) which is statistically significant at the required .05 level of significance. Subsequently, a more specific analysis, utilizing an orthogonal comparison was applied (Edwards 1968). An F-value of 9.087 (df=1,374) for the difference of the means, which is statistically significant beyond the .05 level of significance, indicated that the mean score for the difficult TASC was greater than the mean of the easy TASC. This finding becomes specifically meaningful in light of the third hypothesis which investigated the order effect of repeated administrations of an introspective scale. Previous research findings indicated that the response continued to move in a socially desirable direction upon administration of introspective scales. The design of this research counter-balanced the administrations in order to control for such order effects.

The variability of the means due to order effect was contained in the interaction source of the ANOVA summary table (see Table 2). In order to account for the variance attributable to specific order effect, an additional analysis was performed using an orthogonal comparison (Edwards 1968), which yielded an F-value of 30.803 (df=1,74). This F indicated a statistically significant difference between the means of the total TASC scores specifically due to the order in which they were administered. In light of this, the significant finding of the TASC difficult score being higher than the TASC easy score suggests that the TASC does reflect specific anxiety relative to the situational conditions even on repeated measures.

IMPLICATIONS:

In review of the results of this study, one important outcome appears to have occurred. Test anxiety as reflected by the TASC appears to be differentially related to the test situation. This finding suggests that test anxiety may be more closely aligned with the concept of 'state' anxiety rather than with the concept of 'trait' anxiety. In addition to this possibility, the occurrence of these findings suggest that, in spite of the frequency of responding to a self-report instrument, and the tendency under these conditions to respond in an increasingly socially acceptable direction, the students in this study responded to the differences in the testing situation to a sufficient degree to indicate a statistically significant finding. The implications of this finding are basically three directional. In one direction, the implications are that the use of the TASC and perhaps other introspective instruments do reflect specific situational kinds of circumstances, both in regard to anxiety and in regard to many other personality variables which are related to situational differences as appropriate. In another direction, the concern for the tendency to respond to more socially acceptable direction, on self-report scales may be amenable to specific situations. That is, in spite of the tendency to respond in a more socially acceptable way on repeated measures of the same or a similar instrument, if the situation is specific and the response is to be made during that particular situation, the socially desirable responding may give way to the real feelings of anxiety in the situation. In the third direction, the vagueness of the concept of 'test' anxiety and its relationship to 'state' anxiety has been made somewhat clearer. It has become more definitely indicated that 'test' anxiety, being

subject to situational differences in testing conditions, is within the 'state' concept of anxiety, rather than in the 'trait' concept. The ramifications of such types of studies are both interesting and challenging. In the next discussion, suggestions are offered for further investigations.

IMPLICATIONS FOR FURTHER RESEARCH:

The conclusions of this study open the door to some other research. One of the hinderances and probable discouragements regarding the investigation of test anxiety, using the TASC in specific situations, has very likely been the order effect which has been discussed in the literature. The significant finding of a mean difference between the easy TASC and the difficult TASC, in spite of this ordering effect, suggests that the specific anxiety in the two conditions as reflected by the TASC overpowered the order effect and indicated a significant difference in the TASC means. This finding could open the door to other research into how specifically the TASC may be used to indicate specific test anxiety under differing conditions. Some possible suggestions follow.

In this present study, the time between the math and spelling tests as well as the easy and difficult TASC administrations was approximately 24 hours. Studies in the literature (Sarason et al., 1960), indicates that the order effect occurred to a lesser degree over longer periods of time. Other studies may be undertaken to investigate the effect of longer periods of time between the readministrations of the TASC in conjunction with specific content area tests. In addition, this present study was in regard to the TASC score related to standardized tests. An interesting investigation in regard to TASC scores related to teacher made

tests could be undertaken. Teachers are prone to make judgments regarding a student's knowledge, based upon classroom tests, more than on standardized tests. If the relationship of test anxiety regarding classroom teacher made tests were known, the present testing procedure may be adjusted to allow for the test scores to reflect more accurately the true knowledge scores of the students.

The TASC, as shown by factor analysis, is not an unidimensional instrument, but rather includes at least three dimensions. It was however, still able to indicate significance in several hypotheses regarding test anxiety. Opportunity for interesting and very important research would be found in developing and including other 'test' anxiety items in the TASC, or in developing another similar instrument composed of only 'test' anxiety items. The use of such an instrument could be made in similar studies to investigate more completely and adequately the effects of test anxiety as reflected by introspective scales.

Introspective scales are also used in research regarding a variety of personality variables. One of the probable limitations of their use has been the ordering or sequential effects which occur. The findings of this study may open the door for similar investigations using these other introspective scales for various personality variables in specifically different situations.

In addition to suggesting direction and possibilities for further research, these findings suggest some practical use in the classroom. The TASC may be used by a teacher to ascertain the anxiety levels of students in specific content areas. This finding may be valuable in influencing the approach made toward testing certain of the students. It may affect the teacher's reliance on tests, perhaps increasing the

use of other additional means than test scores for determining grades. Individual considerations of the students' TASC scores may suggest that a variety of considerations need to be made with various individual students in attempting to allow their test scores to be relatively free from the influence of anxiety and consequently reflect more 'true' knowledge scores.

One limitation to this study is the use of only subjects who chose math as the most difficult content area and spelling as the easiest. The findings could conceivably then be a function of the content areas under investigation. To broaden the application of these findings further studies with other content areas chosen as difficult and easy may be of considerable value.

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